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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/798,974

03/12/2004

Hideki Hatano

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05/24/2007

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EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT

PAPER NUMBER

1756

MAIL DATE

DELIVERY MODE

05/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/798,974	Applicant(s) HATANO ET AL.	
	Examiner Martin J. Angebrannndt	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The response of the applicant has been read and given careful consideration. Responses to the arguments are presented after the first rejection to which they are directed. **The examiner has not been able to procure a copy of Kitamura "Breakthrough in ferroelectric single crystals for optical applications control of non-stoichiometric defects", Oyo Butsuri, Vol 69(5) pp. 511-517 (2000) and would appreciate a copy, with a translation if possible, provided for the record by the applicant.**

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999).

Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999) describes the

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formation of nearly stoichiometric lithium tantalate crystals using the same process developed for lithium niobate where the $\text{Li}/(\text{Li}+\text{Ta})$ is estimated to be 0.4975 and where the growth takes place in 1:100 (oxygen:nitrogen) resulting in a colorless, transparent and crack free crystal 35 mm D x 80 mm (page 1816, right column-page 1817/left column). While the crystals are colorless is grown in reducing conditions (without oxygen), the crystals growth are in the presence of oxygen. The absorption edge is found to be in the 300-305 nm range and crystals are sensitive to 364 nm. (page 1817, right column)

Claims 1-6 have been read to embrace the unrecorded crystal and that the exposure is an intended use. The applicant did not comment on this position, so the examiner holds that the applicant seeks coverage of the recorded and unrecorded crystals.

The applicant argues that the crystals disclosed by Furukawa et al. are not bounded by the claims. Upon a close reading of the reference, the examiner disagrees, noting that the growth takes place in a 1% oxygen environment (the instant specification uses 0.5% at [0044] of the prepub) and only discusses that reduced crystals can be formed when oxygen is not present during the growth and no dopants are added. The use in two color recording is an issue of intended use and not at issue as there are no process claims under prosecution.

5. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa et al. "Stoichiometric LiTaO_3 for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999), in view of Imbrock et al., "Nonvolatile holographic storage in photorefractive lithium tantalate crystals with laser pulses", JOSA B vol. 16(9) pp. 1392-1397 (1999).

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Imbrock et al., "Nonvolatile holographic storage in photorefractive lithium tantalate crystals with laser pulses", JOSA B vol. 16(9) pp. 1392-1397 (1999) teaches two color holography in lithium tantalite where an argon ion laser (488 nm) or a Xe lamp is used as a gating beam and the object and reference beams for recording the hologram are from a 660 nm diode laser. The use of a single color results in the hologram being erased upon readout (page 1302/left column)

To address the embodiments bounded by the claims where a non-volatile hologram is recorded in the crystal using two different wavelengths, the examiner holds that it would have been obvious to modify the holographic recording process of Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999) use the gating beam technique disclosed by Imbrock et al., "Nonvolatile holographic storage in photorefractive lithium tantalate crystals with laser pulses", JOSA B vol. 16(9) pp. 1392-1397 (1999) to form a non-volatile holographic grating with the grating period resulting from the interference patterns from the 660 nm laser beams.

There is clearly a benefit to forming more permanent holograms using the two color processes as evidenced by Imbrock et al., so there is a clear motivation and the use of a lithium tantalate in this process and the formation of a hologram in Furukawa et al. provides direction and a reasonable expectation of success.

6. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999), in view of Raklujic et al. '669 and Imbrock et

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al., "Nonvolatile holographic storage in photorefractive lithium tantalate crystals with laser pulses", JOSA B vol. 16(9) pp. 1392-1397 (1999).

Raklujic et al. '669 describe the recording of optical filters as wavelength multiplexed gratings in a single photorefractive crystal, either superimposed or spatially separated (9/41-57). Useful photorefractive crystals include lithium niobate and lithium tantalate (1/38-64).

For the embodiments of the claims not anticipated or rendered obvious above, It would have been obvious to use holographic gratings formation techniques with the holographic recording media of Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999) to form wavelength filters such as those taught by Raklujic et al. '669 with a reasonable expectation of forming useful wavelength filters based upon these being holographic recording materials and within those embraced by the teachings of Raklujic et al. '669 and further it would have been obvious to use the gating beam technique disclosed by Imbrock et al., "Nonvolatile holographic storage in photorefractive lithium tantalate crystals with laser pulses", JOSA B vol. 16(9) pp. 1392-1397 (1999) to form a non-volatile holographic grating with the grating period resulting from the interference patterns from the 660 nm laser beams.

There are no further comments as no further arguments were directed at this rejection.

7. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999), in view of Raklujic et al. '669 and Imbrock et al., "Nonvolatile holographic storage in photorefractive lithium tantalate crystals with laser pulses", JOSA B vol. 16(9) pp. 1392-1397 (1999), further in view of Psaltis et al. '126.

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Psaltis et al. '126 describes the formation of a multichannel wavelength filter as illustrated in figures 1 and 4, where the different [0039,0052-0053]

In addition to the basis provided above it would have been obvious to modify the wavelength filters resulting from the combination of Furukawa et al. "Stoichiometric LiTaO₃ for dynamic holography in the near UV wavelength range", Jap. J. Appl. Phys., Vol 38 pt. 1 3B 1816-1819 (1999) with Raklujic et al. '669 and Imbrock et al., "Nonvolatile holographic storage in photorefractive lithium tantalate crystals with laser pulses", JOSA B vol. 16(9) pp. 1392-1397 (1999) by forming the gratings in parallel as shown in figures 1 and 4 of Psaltis et al. '126 based upon the direction to spatially separated gratings in Raklujic et al. '669.

There are no further comments as no further arguments were directed at this rejection.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

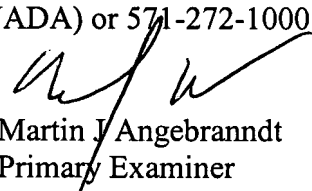
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Martin J. Angebranndt
Primary Examiner
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12/6/2006